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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/803,320

03/09/2001

Baruch Pletner

ACX-128CP

8693

21323

7590

10/03/2002

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EXAMINER

HARRINGTON, ALICIA M

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,320

Applicant(s)

PLETNER ET AL.

Examiner

Alicia M Harrington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/9/01, 8/24/01, and 6/18/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 17 April 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5&7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Information Disclosure Statement

The Examiner has considered the information disclosure statement filed on 8/24/01 and 6/18/02.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the abstract contains claim language (comprising). Correction is required. See MPEP § 608.01(b).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: The continuation information on the first page of the specification should be updated to include patent numbers for applications that are now issued patents.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 8, applicant claims the actuator stabilizes the wafer. The Examiner is unclear as from what event the wafer is stabilized. From vibration? From movement between two actuators? Thus, the claims are indefinite as they fail to particularly and distinctly claim the subject matter applicant regards as his invention.

Claims 2-8 inherit their indefiniteness from claim 1 from which they depend.

The claims will be examined as best understood by the Examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,6,8 are rejected under 35 U.S.C. 102(b) as being anticipated by Makinouchi et al (US 4,958,082).

Regarding claim 1, Makinouchi position measuring wafer stage (1); at least two actuators (#21 and another not shown); at least two sensors (2, 20, 23 for detection of movement of x and y position- col. 3, lines 10-30; col. 4, lines 5-20 and 40-46; col. 7, lines 1-15); at least one electrical communication (22) where upon detection of rotational displacement by sensor activates the actuator to stabilize the movement between two actuators.

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Regarding claim 3, Makinouchi disclose using laser interferometers.

Regarding claims 6 and 8, Makinouchi controls the stages to move.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2,4,5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makinouchi, as applied to claim 1 above

Regarding claim 2, Makinouchi fails to specifically disclose the type of actuator.

However, electro active actuators and voice coil motors are notoriously well known in the art of wafer stages, and the Examiner takes official notice to that fact. Thus, the motor source of Makinouchi is a functional equivalent and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use either claimed type of motor source since they are well known in the art to be used in stage actuation.

Regarding claim 4, Makinouchi fails to specifically disclose the circuit comprising a digital signal processor. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makinouchi, to include a digital signal processor, since it an obvious progression in the art of signal processing and digital processor are can come in small packages with lots of processing speed and stability.

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Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makinouchi, as applied to claim 1 above, in view of Schubert et al (US 5,823,307).

Regarding claim 5, Makinouchi fails to specifically disclose the circuit comprising a digital signal processor. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makinouchi, to include a digital signal processor, since it an obvious progression in the art of signal processing and digital processor are can come in small packages with lots of processing speed and stability. Further, Makinouchi fails to specifically disclose the claimed circuit elements for processing signal. However, Makinouchi discloses the claimed invention with the exception of the processor having the claimed elements, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital processor, and as illustrated by Schubert.

In the same field of endeavor, Schubert disclose an actuator control system which receives an input conditioned position signal (analog) that is converted to digital for digital signal processing. The digital control signal is conditioned for output to control an actuator (see figure 18). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makinouchi, as taught by Schubert, to provide an control system for movement when using motors or actuators.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makinouchi and Schubert, as applied to claim 5 above

Regarding claim 6, Makinouchi and Schubert fail to specifically disclose a type of control technique. However, the Examiner takes official notice that control techniques such as H-

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infinity, as well known and used in semiconductor wafer stage control machinery, such as xy stagers. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makinouchi system to implement a control system such as H-infinity, since it well known in the art and the system is known for controlling system that are long term and continuous operators such as xy stagers.

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makinouchi in view of Schubert et al (US 5,823,307).

Regarding claim 9, Makinouchi position measuring wafer stage (1); at least two actuators (#21 and another not shown); at least two sensors (2, 20, 23 for detection of movement of x and y position- col. 3, lines 10-30; col. 4, lines 5-20 and 40-46; col. 7, lines 1-15); a controller (22) where upon detection of rotational displacement by sensor activates the actuator to stabilize the movement between two actuators. However, Makinouchi fails to specifically disclose the controller is single board computer and signal condition as claimed. Although, digital signal processing that include signal conditioning is a known control processing used in actuator control systems, as taught by Schubert.

In the same field of endeavor, Schubert disclose an actuator control system which receives an input conditioned position signal (analog) that is converted to digital for digital signal processing. The digital control signal is conditioned for output to control an actuator (see figure 18). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makinouchi, as taught by Schubert, to provide an control system for movement when using motors or actuators.

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Regarding claim 10, Makinouchi and Schubert fail to specifically disclose the type of actuator. However, electro active actuators and voice coil motors are notoriously well known in the art of wafer stages, and the Examiner takes official notice to that fact. Thus, the motor source of Makinouchi is a functional equivalent and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use either claimed type of motor source since they are well known in the art to be used in stage actuation.

Regarding claim 11, Makinouchi discloses the sensors are laser interferometers.

Regarding claim 12, Makinouchi disclose the system is control to move the wafer. However, Makinouchi does not disclose the claimed time frame. Thus Makinouchi discloses the claimed invention with the exception of the response time the controller, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure a processor to provide a control function within a time period. One of ordinary skill knows such timing would depend on the type of processor implemented and the amount of data and such designing would be within routine skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M Harrington whose telephone number is 703 308 9295. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

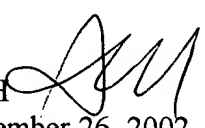
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703 308 4883. The fax phone numbers for the

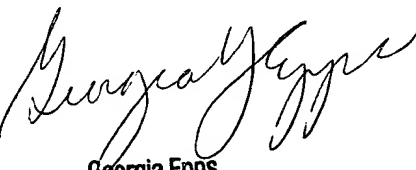
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organization where this application or proceeding is assigned are 703 308 7724 for regular communications and 703 308 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

Alicia M Harrington
Examiner
Art Unit 2873

AMH 
September 26, 2002


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800